Bridging the Gap Between Intention & Action – How Procrastination Alters Entrepreneurial Inclination in University Students

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***Abstract*—There is a disparity between entrepreneurial intention or attitudes and entrepreneurial activity among university students, commonly known as "Action-Intention Gap". The purpose of this study is to explore how procrastination creates this gap between entrepreneurial intention and activity. In previous studies, it is shown that university students have a strong desire to become entrepreneurs, but in most cases, they do not bridge this desire into reality. Procrastination, which is the tendency to delay performing necessary tasks despite the possibility of negative consequences, is one of the causes of this barrier. The study will analyze the psychological and behavioral factors of procrastination. In addition, this study will highlight the need to improve university students' time management and self-control to close the desire-action gap between entrepreneurial attitudes and actions. Finally, this study will provide relevant advice to educational institutions and policy makers, which can be helpful in stimulating students' interest in entrepreneurial activities and taking effective action.**

***Index Terms*—Procrastination, Entrepreneurial Inclination, Action-Intention Gap, University Students, Time Management, Self-Control.**

I. Introduction

Entrepreneurial activity plays an important role in the progress of the world economy. It not only contributes to economic growth by starting new businesses and creating jobs, but also brings change in society through innovation and implementation of new ideas. It is crucial to stimulate the entrepreneurial spirit among the younger generation, as they start working with new ideas and a risk-taking mindset.

University students are an important group in terms of entrepreneurial activity. At this stage they acquire innovative thinking and willingness to try new things along with their academic education. Studies have shown that many university students express a desire to start entrepreneurial activities. However, their wishes often do not translate into practical action. The difference between this desire and actual action is commonly known as the "intention-action gap". This study aims to bridge the intention-action gap using machine learning.

One of the main causes of this will-action gap is procrastination. Procrastination is a behavior that refers to the tendency to delay doing something even after realizing the need to do it. This causes various problems in students' personal and professional lives, including lack of time management, lack of confidence, and tendency to make wrong decisions. In the case of entrepreneurial activity, procrastination hinders students from fulfilling their desires and reduces their potential success.

There are various psychological and behavioral reasons behind procrastination in university students. These include excessive focus on perfection, fear of failure, and lack of self-control. These trends hinder their work progress and become a major obstacle in starting entrepreneurial activities. Furthermore, students' lack of support from family, friends and teachers may also discourage them from starting entrepreneurial activities.

The study analyzes the relationship between students' willingness towards entrepreneurial activity and their actual action. It determines how procrastination affects their entrepreneurial attitude and how it hinders their entrepreneurial activity. Through research we can provide effective solutions on the causes and remedies of procrastination among students. An important part of the research is to identify the influence of family, friends and teachers on the realization of students' desire for entrepreneurial activity. This will help us understand how social support influences their attitudes and behavior.

The findings of this study are important not only for students, but also for educational institutions and policy makers. It will identify the barriers to student entrepreneurship and help educational institutions take effective steps to address them. In addition, this study will provide guidelines for policy makers to create the right environment to transform students' desire for entrepreneurial activity into reality.

Finally, through this research we will be able to find an effective solution to develop entrepreneurial spirit among university students. This will not only improve their personal and professional lives but will also play an important role in innovation and economic growth in society.

II. Research Gap

Knowledge Gap:
In earlier studies, researchers attempted to investigate issues connected to procrastination, such as study difficulties. Additionally, studies on action-related research and entrepreneurial goals have taken place. This study appears to explore a relatively unexplored area: the relationship between procrastination and the discrepancy between entrepreneurial intentions and actions. It seeks to understand how procrastination affects entrepreneurial behavior, a potentially under-researched facet of entrepreneurial psychology.

III. Literature Review

In many ways, procrastination affects the goal of being an entrepreneur among students. According to some research, the goal of being an entrepreneur is determined during the period of being a student. Student life is the time where students are determined and don't hesitate to take risks. Not only procrastination but also other factors or contextual elements like age and gender significantly influence entrepreneurial involvement [1]. In this study, the objective was to categorize students into four groups—Doers, Procrastinators, Dreamers, and Abstainers—to explore how entrepreneurial intentions transition into actions. Studies found that while some students (1.4%) put off establishing a business until the end of their undergraduate education, over 19% of students hope to do so five years after they graduate from college [1]. Data for this survey was gathered using GUESSS, with convenience sampling. Ordinal Logistical Regression was used as a statistical tool. However, this study lacks longitudinal data and insufficient differentiation between entrepreneurial types or activities.

Another review says that individual and university-level factors play a critical role in transitioning entrepreneurial intentions into actions [2]. This finding was determined by using cross-sectional analysis with GUESSS data (2013-2014). This includes the moderation of variables such as family background, gender, age, etc. However, this research has a limitation in the method itself. The cross-sectional design limits the ability to observe dynamic behavioral changes.

According to Stewart et al. [5], procrastination tendencies decreased as students progressed, influenced by changes in study goals. This was also a cross-sectional survey, but the sample size was small. Additionally, the study focused on specific disciplines.

The above reviews highlight various reasons for students' inclinations towards entrepreneurial intentions. They address why and how procrastination and other factors influence entrepreneurial intentions. Some tried to bridge the action-intention gap. Implementation intentions and action-state orientation significantly moderate the intention-behavior gap [3]. This study was interesting as it was conducted in two phases or waves in the Netherlands. Data included trait procrastination, action-state orientation, and implementation intentions. However, the limitation was that the data collection relied on self-reported measurements, and the dataset was small.

Adam and Fayolle [4] state that psychological commitment enhances the transition from intention to behavior. This study focused on conceptual models without empirical data, which decreased the validation and contextual exploration.

Effective implementation intentions rely on well-structured, context-specific plans [6]. However, the study fell short due to the lack of primary data and applicability across demographics as it was based on a literature review integrating empirical studies and theoretical frameworks.

The Theory of Planned Behavior (TPB) variables strongly predicted entrepreneurial actions, but the intention-behavior gap varied with context. This theory was tested for its efficacy in predicting entrepreneurial actions using a longitudinal survey in Austria and Finland [7]. However, the study was limited by the fixed time interval and reliance on self-reported data.

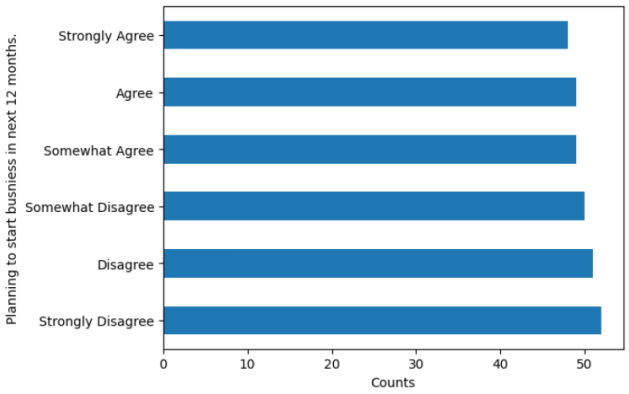

Fig. 1: Terget Variable

IV. Methodology and Analysis

The dataset used for this study contains responses from university students on procrastination tendencies, entrepreneurial intentions and various psychological and demographic factors. Variables include demographic information (e.g., Age, Gender, Academic Year), procrastination measures, and entrepreneurial intention/action indicators. The target variable was: "I plan to take steps to start a business in the next 12 months."; it directly reflects entrepreneurial intention, which seems to align with the theme of my study. This makes it a likely candidate for predicting entrepreneurial inclination.

In the Data Preprocessing phase, the dataset was loaded using pandas. Columns are stripped of extra whitespace to ensure consistency in accessing variables. Then the dataset was inspected to find if there is any missing values and inconsistencies . I have used "Label Encoder" to transform the categorical data into numerical data. After testing, the dataset exhibited an imbalance in the target variable, where instances of students planning to take entrepreneurial steps in the next 12 months were underrepresented compared to those who did not. To address this issue, the Synthetic Minority Over-sampling

Technique (SMOTE) was applied.

```
Class distribution after SMOTE:
I plan to take steps to start a business in the next 12 months.
3    52
4    52
1    52
5    52
0    52
2    52
Name: count, dtype: int64
```

Fig. 2: Application of SMOTE

Based on their hypothesized impact on the target variable, features were selected. Procrastination indicators: E.g., "How often do you procrastinate on academic tasks?" Entrepreneurial intention and related variables: E.g., "I intend to take steps to start a business in the next 12 months." Psychosocial influences: E.g., "My closest family members think that I should take steps to start a business in the next 12 months." Control and efficacy perceptions: E.g., "If I took steps to start a business in the next 12 months, I would be able to control the progress myself."

The dataset was divided into training and testing sets to

	Feature	Importance
1	I intend to take steps to start a business in ...	0.156116
2	I will try to take steps to start a business i...	0.127174
7	My closest family members think that I should ...	0.081222
9	People who are important to me think that I sh...	0.065497
3	For me, taking steps to start a business in th...	0.062327
6	For me, taking steps to start a business in th...	0.058992
12	It would be easy for me to take steps to start...	0.057044
4	For me, taking steps to start a business in th...	0.055770
0	Rate your agreement with the statement: "I oft...	0.053323
11	If I took steps to start a business in the nex...	0.050614
14	How much time have you spent on activities aim...	0.048510
8	My best friends think that I should take steps...	0.047373
5	For me, taking steps to start a business in th...	0.046989
10	If I wanted to, I could take steps to start a ...	0.045079
13	If I wanted to take steps to start a business ...	0.043970

Fig. 3: Feature Selection based on Feature Importance

evaluate model performance. Models like Logistic Regression, Decision Trees, Random Forest and Support Vector Machines (SVM) has been applied for predicting categorical outcomes. Scaling techniques such as MIN-MAX or StandardScaler have been applied to normalize features if required. Then the models were trained on the training set using selected features.

In the evaluation phase, assessed model performance using metrics like accuracy, precision, recall, F1-score, and AUC-ROC.

After analyzing, I found the highest accuracy in Random Forest (RF) algorithm, based on that feature importance have been applied to understand the predictors most influential in driving entrepreneurial intentions. Additionally, explored relationships between procrastination tendencies and entrepreneurial inclination through statistical measures. In addition, investigated procrastination patterns and their correlation with demographic variables like academic year or field of study.

To test the models validation and robustness, performed

```
[ ] accuracy_score(ytest,rf.predict(xtest))
```

```
0.8666666666666667
```

```
print(classification_report(ytest,rf.predict(xtest)))
```

	precision	recall	f1-score	support
0	1.00	0.75	0.86	12
1	0.70	0.88	0.78	8
2	0.93	0.87	0.90	15
3	0.83	0.71	0.77	7
4	0.86	1.00	0.92	6
5	0.86	1.00	0.92	12
accuracy			0.87	60
macro avg	0.86	0.87	0.86	60
weighted avg	0.88	0.87	0.87	60

Fig. 4: Classification Report for Random Forest

cross-validation to ensure model reliability across different subsets of data.

V. Results

The study's machine learning approach's findings are shown in this part. These findings stem from the training and testing of models with the target variable's high performing features, which increase the likelihood that the machine will perform better and may even perform well in real-world scenarios. Five Different models have been applied here – Decision Trees, Random Forest, K-Nearest Neighbors (KNN), Support Vector Classification (SVC), and Naïve Bayes Classifier. The table below shows the accuracy of the models. They are sorted in Descending orders (Highest Performing Model to Lowest Performing Model).

TABLE I: Accuracy Table

Algorithms	Accuracy
Random Forest	86%
Decision Trees	81%
KNN	66%
SVC	63%
Naive Bayes Classification	50%

VI. Discussion

The target variable was: "I plan to take steps to start a business in the next 12 months." The machine learning approach employed in this study was designed to predict students' entrepreneurial ambitions based on several features.

The capacity of Random Forest to capture intricate feature interactions and its resilience to overfitting is demonstrated

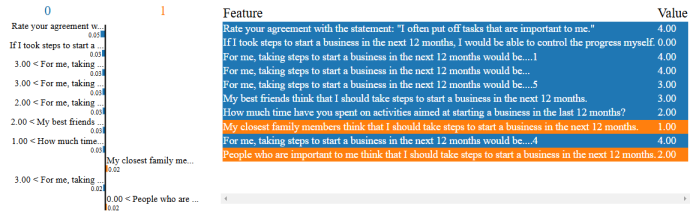

Fig. 5: Factors Contributing

by its 86% accuracy, which was the highest of the five models tested: Random Forest, Decision Trees, K-Nearest Neighbors (KNN), Support Vector Classification (SVC), and Naïve Bayes. With an accuracy rate of 81%, decision trees demonstrated good performance; they were interpretable but marginally less successful than Random Forest. Moderate accuracy of 66% and 63% were shown by KNN and SVC, respectively. Issues with feature scaling and hyperparameter optimization probably had an impact on their performance. With a 50% accuracy rate, Naïve Bayes did the worst, mostly due to its high independence requirement, which is inappropriate for the correlated characteristics in this dataset.

These findings highlight how well tree-based models handle complicated behavioral data, especially when used in ensemble settings like Random Forest. To build on these findings and increase real-world applicability, future research could investigate sophisticated models like Gradient Boosting Machines, better feature engineering, and include more assessment criteria.

VII. Conclusion

With an emphasis on the intention-action gap, this study investigated how procrastination and other factors affect university students' entrepreneurial intentions. The goal variable, "I plan to take steps to start a business in the next 12 months," was successfully forecasted through the use of machine learning. With an accuracy of 86%, Random Forest beat the other models in the test, proving its capacity to identify intricate correlations in the data. By addressing class imbalance, SMOTE improved model reliability. The results support earlier studies by highlighting the effects of social influences, perceived control, and procrastination on entrepreneurial behavior. The findings highlight the necessity of measures that assist students in moving from entrepreneurial intentions to activities, such as better time management, social support, and structured surroundings. The study emphasizes the importance of machine learning in behavioral research, despite its limitations, which include its cross-sectional design and dependence on self-reported data. Longitudinal studies and sophisticated algorithms should be used in future research to improve knowledge and prediction accuracy. By tackling procrastination and closing the intention-action gap, this research offers educators and policymakers practical insights to encourage entrepreneurial engagement.

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